Strategy Research Project

Army Bulk Petroleum Current Force Structure Mix and its Implications

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United States Army War College
Class of 2013

REPORT DOCUMENTATION PAGE	Form Approved OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
xx-03-2013	STRATEGY RESEARCH PROJECT	

4. TITLE AND SUBTITLE
Army Bulk Petroleum Current Force Structure Mix and its Implications

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Colonel Marc D. Thoreson
United States Army

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Mr. Scott T. Forster
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8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army War College
122 Forbes Avenue
Carlisle, PA 17013

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Distribution A: Approved for Public Release. Distribution is Unlimited.

13. SUPPLEMENTARY NOTES
Word Count: 6,732

14. ABSTRACT

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15. SUBJECT TERMS
Logistics, Force Structure, Expeditionary, Bulk Fuel Operations, Inland Petroleum Distribution System

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER *(Include area code)*
UU	UU	UU	UU	36	

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Title:	Army Bulk Petroleum Current Force Structure Mix and its Implications
Report Date:	March 2013
Page Count:	36
Word Count:	6,732
Key Terms:	Logistics, Force Structure, Expeditionary, Bulk Fuel Operations, Inland Petroleum Distribution System
Classification:	Unclassified

Since 2008, the US Army has divested itself from its active duty bulk petroleum capability while maintaining the petroleum pipeline Force Structure exclusively in the reserve component. In doing so, the Army can no longer provide an expeditionary bulk fuel capability necessary to meet the Geographic Combatant Commanders' requirements during the initial phase of an operation. In the last ten years, the Army has made significant Force Structure decisions based on a heavy reliance on contingency contracting, current demand signal associated with operations in Iraq and Afghanistan, and the immediate need for other critical capability shortfalls. In response to a rapidly changing global security environment, our recent change in strategic direction coupled with an imminent period of budgetary austerity only compounds this expeditionary shortfall. This paper confirms the validity of bulk petroleum requirements, the reality of the capability gap, and offers potential short and long term recommendations to close the current expeditionary logistics capability gap.

Army Bulk Petroleum Current Force Structure Mix and its Implications

> War in general, and the commander in any specific instance, is entitled to require that the trend and designs of policy shall not be inconsistent with these means.
>
> —Carl von Clausewitz[1]

After more than a decade of U.S. commitment to the global war on terrorism, the withdrawal of American troops from Iraq in 2010 ending Operation Iraqi Freedom (OIF) and the announced drawdown of U.S. Forces from Afghanistan after a mission transfer to Afghan security forces by December 2014 signal another U.S. post-war transitional period. Historically, our involvement in a major armed conflict has always been punctuated with a significant reduction in military end strength. The end of Operation Enduring Freedom (OEF) indicates no exception to the rule. After World War II the Army went from 8 million soldiers and 89 divisions in 1945 to 591,000 men and 10 divisions by 1950[2]. Similarly, at the conclusion of the Vietnam conflict the U.S. military drawdown efforts reduced the Army from its 1968 highest personnel end strength of 1.57 million[3] to 785,000 soldiers and 13 divisions. Present plans include a reduction in force which will bring down the Army from 570,000 to an end strength of 490,000 soldiers by 2017 with an additional cut of 80,000 to 100,000 active duty and reserve soldiers if sequestration under the Budget Control Act of 2011 occurs[4]. Amidst early Army Force Structure cuts anticipating the post-conflict drawdown, the Army is also contemplating the competing challenge of posturing forces to support the new ‘re-balance’ to the Asia-Pacific strategic direction addressing our current and future global security environment. There are many rapidly changing global environmental trends affecting U.S. interests. Globalization, economic interdependency, fossil fuel dependency, demographic shifts,

water scarcity, natural disasters, the threat of pandemics, and the exponential acceleration of technological innovation are all enduring trends defining our future. Moreover, the combination of emerging economic powers, newly formed fragile states, failed states, violent extremist organizations, transnational criminal organizations, and the proliferation of weapons of mass destruction (WMD) constitute the core of current and future security threats which, when combined with environmental trends, define the complexity of our global security challenges and potential significant threats to U.S. vital interests for the foreseeable future. In view of those global security realities, the Department of Defense (DoD) published in January 2012 additional strategic guidance highlighting two critical components relevant to force structure decisions: 1) "It (the Joint Force) will have global presence emphasizing the Asia-Pacific and the Middle East (…)", and 2) "The Joint Force will be prepared to confront and defeat aggression anywhere in the world."[5] This guidance implies an expeditionary capability available to rapidly deploy globally in support of the full range of military operations. A sustainment component to this capability includes a bulk petroleum expeditionary force structure capable of establishing the necessary theater fuel stocks and distribution network to maintain the Joint Force Commander's operational reach during the initial phase of an operation. Despite this critical requirement and perhaps as a result of an over-reliance on contingency contracting in the last decade, the Army has totally eliminated this capability from its active duty inventory. The last Petroleum Battalion Headquarters and the last Petroleum Pipeline Terminal Operating (PPTO) Company required to generate an early entry bulk petroleum capability were inactivated in July 2011 and August 2012 respectively. This new Force Structure composition leaves only six active duty

petroleum companies at the echelons above brigade (EAB) of which none are currently organized, trained, equipped, or manned to perform the unique mission of establishing the initial theater bulk fuel receipt-storage-distribution footprint (also known as the tactical petroleum terminal or base terminal). Although recent significant progress has been made toward 'operationalizing' the reserve component, statutory delays and pre-deployment mobilization activities still prevent the reserve component from deploying those units to a theater of operation during its initial phase to begin establishing the theater, thus leaving the Army and the Joint Force Commander (JFC) with an expeditionary bulk fuel capability gap.

This paper will attempt to first, confirm the validity of the early entry bulk petroleum requirement for contingency operations and second, validate the reality of the current bulk petroleum expeditionary capability gap. This paper will then offer some potential short and long term solutions using the Doctrine-Organization-Training-Material-Leadership and Education-Personnel and Facilities (DOTMLPF) framework to remedy over current shortfall. Finally, this paper will address the potential long term implications of force structure decisions on the institution.

The Validity of the Requirement

In its simplest form, the Army Force Structure review allows our capabilities to remain aligned with the operational requirements necessary to achieve our strategic military end states. To that end the review assesses three major areas: 1) the validity of the broad and discrete military requirements in support of our national strategy, 2) the capability and capacity to meet those requirements, 3) and when necessary the set of potential comprehensive and integrated solutions to reduce excess force structure and fill critical shortfalls.

Similar to other strategic functions, our Army Force Design process faces an ill-structured and complex problem to identify the best Force Structure mix to meet current and future requirements levied on our military element of national power. This must be done in an increasingly restrictive budgetary environment while continuously assessing the risk to strategic end state and the risk to the Force. Among many considerations specific to expeditionary bulk petroleum, U.S. law, strategic guidance, doctrine, as well as more discrete geographical combatant commands historical data and current plans' estimates form the basis for the Army's bulk fuel contingency requirements.

The Army, as a Military Department, has a legal obligation, a Department of Defense directive, and a doctrinal mandate to provide logistics to the Force. The Title 10, United States Code (USC), provides the Military Departments the authorities to generate the logistics capabilities necessary to sustain their respective forces in the performance of their diverse missions. The Army has the additional responsibility to meet sister Services' land-based logistical requirements when fulfilling its Army Support to Other Services (ASOS) executive agent responsibilities. The Army must also be prepared to fulfill its role to provide logistics to other governmental agencies as part of its Defense Support to Civilian Authorities (DSCA) responsibilities. These Title 10 legal requirements must be reconciled with our strategic guidance to inform our force structure decisions.

Our strategic direction remains one aimed toward global influence despite the human toll and financial cost of prosecuting the global war on terrorism outside the U.S. while simultaneously dealing with the aftermath of the 2008 global financial crisis. Our

most recent U.S. National Security Strategy reflects the necessity of continuing a policy of international engagement:

> Engagement is the active participation of the United States in relationships beyond our borders. It is, quite simply, the opposite of a self-imposed isolation that denies us the ability to shape outcomes. Indeed, America has never succeeded through isolationism. As the nation that helped to build our international system after World War II and to bring about the globalization that came with the end of the Cold War, we must reengage the world on a comprehensive and sustained basis.[6]

This strategy of international engagement recognizes the acceleration of globalization and the corresponding intensification of global threats to US security interests. It also delineates the role of the military and its requirement for global reach. To support our national military objectives to counter violent extremism, deter and defeat aggression, strengthen international and regional security, and shape the future force; Admiral Mullen identified, in the 2011 National Military Strategy (NMS), our global power projection ability as a core competency: "These core military competencies include complementary, multi-domain power projection, joint forcible entry, (…), and the ability to fight and win against adversaries."[7]

Our current strategic guidance documents reinforce our need for expeditionary logistics. The DoD Directive 5100.1 clarifies the Army's responsibility to provide logistics with an emphasis on the expeditionary nature of the requirement:

> In addition to the common military service functions listed (…), the Army,(…), shall develop concepts, doctrine, tactics, techniques, and procedures, and organize, train, equip, and provide forces with expeditionary and campaign qualities to (…) provide logistics to joint operations and campaigns, including joint over-the-shore and intra-theater transport of time-sensitive, mission-critical personnel and materiel.[8]

Nested with the DoD directive, the Army's current sustainment doctrine confirms its commitment to the Joint Force: "Army sustainment capabilities continue to provide

the bulk of Army support to other services (ASOS), common user logistics (CUL), and other common sustainment resources."[9]Reinforcing the Army's commitment to the Joint Force, our Sustainment doctrine underlines the importance of the ability to support the speed and timing in power projection as part the broad sustainment requirement: "Success requires deployment and distribution systems capable of delivering and sustaining an expeditionary Army from strategic bases to points of employment within and throughout the future operational environment at the precise place and time of need."[10] Recent historical fuel consumption data from OIF and OEF suggests a planning factor of 22 gallons of fuel per soldier per day[11]. When associating this recent historical fuel consumption with a conservative doctrinal 30-day theater safety level given a two-BCT base scenario, the requirement for bulk fuel can reach an estimated 660,000 gallons per day or an approximate 19.8 million gallon 30-day theater stocks level requirement as early as the closing of the second BCT. Although many variables and computation methods are available to improve the accuracy in forecasting a Joint Force's initial fuel consumption, the necessity of a bulk fuel expeditionary capability becomes evident unless significant assumptions are made regarding the in-theater availability of military grade commercial fuel and the capacity of the host nation petroleum distribution system.

In addition to the broad Army requirements derived from Title 10 USC, strategic guidance, and doctrine; the supporting combatant commanders' discrete expeditionary requirements must validate the need for an early entry bulk fuel capability.

Historically, the supporting role of expeditionary logistics in armed conflict has often proven to be decisive in determining the final outcome of military campaigns. From

the French at the Battle of Dien Bien Phu in 1954 during the Indochina War, to the Axis Forces during the North African Campaign in 1942, or the U.S. Army during its implementation of the Red Ball Express in Northern Europe in 1944; countless armed forces faced the brutal reality of over-extended lines of communications and the challenge to maintain operational reach often culminating short of their desired end state. To this date it is a lesson not yet mastered. A 2009 Rand Corporation study provides more discrete historical examples highlighting the specific use of petroleum pipeline capability. The Rand research team documented ten cases spanning from Vietnam to Operation Iraqi Freedom (OIF) in which a U.S. military pipeline capability was deployed and used (see Table 1).

Table 1: Historical U.S. Military Petroleum Pipeline Employment[12]

	Short Distance Up to 25 Miles	Medium Distance ~50 Miles	Long Distance 100 Miles +
Vietnam	DONG NAI–LONG BIN AB 4 miles: 6″ LWST (3 parallel)	QUI NHON–AN KHE 50 miles: 6″ LWST	
	POL PIER–CAM RANH BAY AFB 6 miles: 6″ LWST (2 parallel)	AN KHE–PLEIKU 59 miles: 6″ LWST	
	SAIGON–TAN SAN NHUT AFB 6 miles: 6″ LWST (2 parallel)		
	PHAN RANG–PHAN RANG AFB 10 miles: 6″ LWST (2 parallel)		
	QUI NHON–PHU CAT AFB 17 miles: 6″ LWST		
	VUNG RO BAY–TUY HOA 18 miles: 6″ LWST (2 parallel)		
Desert Shield	RAS TANURA–KING FAHD APT 25 miles: 6″ IPDS (contaminated, not used)		ADDAMMAM-HAFIR AL BATIN 260 miles: 6″ IPDS (partially complete at time of cease fire)
Somalia	MOGADISHU: PORT–AIRFIELD 2.5 miles: 6″ IPDS		
Iraqi Freedom		USMC: BP WEST–LSA VIPER 54 miles: 6″ HRS	UDARI–TALLIL 160 miles: 6″ IPDS
Total	7 (8)	3	1 (2)

Notes: HRS = Hose Reel System, AB = air base, AFB = Air Force Base, LWST= lightweight steel tubing, IPDS = Inland Petroleum Distribution System.

Among those examples, Operation Desert Shield, Operation Restore Hope in Somalia, and Operation Iraqi Freedom in Kuwait and Iraq reflect the last three recent

employments of Army petroleum pipeline. The historical discrete data documents the construction of 719.5 miles of pipeline in 13 distinct locations supporting four separate campaigns or operations. For historical and statistical accuracy, only 434.5 miles of constructed pipeline were used based on fuel contamination and construction delays. However, this study only collected data for 6-inch diameter fuel distribution systems and did not include the numerous deployments and use of the Army assault hose-line system, a 4-inch hose system with a lesser throughput rated capacity. As an example, the assault hose-line was used extensively in Bosnia in support of Operations Joint Endeavor and Joint Guard. In the same 2009 report, the Rand Corporation identified eight current plans from combatant commands addressing future scenarios with a specific petroleum pipeline requirement.

Table 2: Summary of Anticipated Future Requirements[13]

Requirement	Length (miles)	Event	Unclassified Description	Time Sensitive?
A	25 (likely requiring multiple lines)	ISB	Permissive but remote location, time sensitive, very high throughput required	Yes
B	50	MCO	Time-sensitive requirement to move POL	Yes
C	50	MCO	Time-sensitive requirement to move POL	Yes
D	10	NEO	Austere environment, potential requirement to support other nations' forces as well	Yes
E	10	HA/HLD	Austere environment, respond to an environmental disaster	Yes
F	160	MCO	Long distance pipeline, not time sensitive	No
G	35 (likely requiring multiple lines)	MCO	Not time sensitive, very high throughput	No
H	10	MCO	Short distance, not time sensitive	No

The pipeline requirements range from 10 to 160 miles. Five of the eight plans categorized their respective pipeline requirement as time sensitive and would be required in the early phase of the operation. The study's future scenarios reflected different levels of conflict intensity including: the establishment of an intermediate

staging base (ISB), a non-combatant evacuation (NEO), the support to a humanitarian assistance (HA) operation, and five major combat operations (MCO).[14] The 2009 study makes three distinct points articulating the validity of bulk petroleum requirements. First, Geographic Combatant Commands (GCC) have used and continue to plan for the use of Army petroleum pipeline. Second, the pipeline requirement is time sensitive in the majority of the scenarios and is required during the early entry phase of an operation. Third and perhaps less obvious, the study suggests by the limited data collected that a review of existing plans across the GCCs would yield the identification of additional pipeline requirements based on a more extensive analysis of the operational environment and a better understanding of the pipeline capability. Currently, only two of the six GCCs have identified petroleum pipeline requirements[15]. Past usage and future identified requirements indicate that a pipeline capability supports the full spectrum of military operations in both developed and undeveloped theaters of operation. In Field Manual (FM) 10-67, Petroleum Supply in Theaters of Operations[16], pipeline employment considerations are generically addressed. In combination with lessons learned from recent use outlined in the 2009 Rand Corporation study; logistics planners face four main factors: 1) the Joint Force Commander's (JFC) operational reach, 2) physical network throughput 3) convoy mitigation, and 4) access to both an over-the-shore fuel source and to local commercial bulk fuel facilities. Logisticians have a critical role to play in maintaining the JFC's operational reach. Considering that bulk fuel accounts on average for approximately 50% of the tonnage distributed within a theater of operation[17], a logistics planner must judiciously employ all available distribution assets to most efficiently meet all requirements. The use of a petroleum pipeline from the base terminal

(first bulk storage site) to the head terminal (last bulk storage site connected to the pipeline) “reduces the need to haul fuel by road or rail”[18] and allows the theater distribution system to extend its network into the joint operational area and deliver bulk fuel using the road network to deliver fuel to stand alone general support (GS) bulk sites and beyond to Brigade Combat Teams (BCT). Another factor to consider is the road congestion in proximity of port infrastructures and commercial petroleum facilities attributable to daily seaport and airport unloading and offloading activities as well as the flow of goods from and to distribution centers, markets, and the local industrial base. The use of a petroleum pipeline allows our Army to ‘push product’ while avoiding vehicle congestion and associated road hazards. By redirecting tanker truck movement to segments of main supply routes (MSRs) not affected by traffic congestion, the use of a petroleum pipeline increases the throughput of those vehicle assets.

The current asymmetric operational environmental coupled with the proliferation of Improved Explosive Devices (IEDs), has forced commanders to scrutinize all ground movement justifying risk to the force only with mission necessity. In Somalia during Operation Restore Hope, U.S. Forces built a 2.5 mile-long pipeline along the Mogadishu airfield as a convoy mitigation measure in an effort to keep Soldiers off the road. This prudent force protection benefit must be weighed against the workload of providing pipeline security to avoid sabotage, theft of equipment, or pilferage.

Access to the fuel source is critical to developing the theater bulk petroleum distribution grid and setting the theater. Regardless of the maturity of the theater, there are many reasons a commercial bulk fuel source may not be available on the onset of an operation in the vicinity of the seaport of debarkation (SPOD). An earthquake could

compromise the structural integrity of commercial bulk storage facilities, the political instability could threaten access to state-controlled sources, violent extremist organizations or transnational criminal organizations could target bulk fuel facilities, or the source could not be sufficient to meet both local commercial needs and the additional U.S. military requirements. Because of these possibilities, the establishment of a base terminal with a pipeline in the vicinity of a coastline allows for the ship-to-shore direct receipt of fuel from a barge or an ocean-going tanker in addition to having access to ground commercial bulk sites often located in the vicinity of port facilities.

Apart from strategic, doctrinal and technical guidance, a careful analysis of the future operational environment can also contribute in validating future fuel requirements. Two global trends support evidence that our military fuel requirements will not significantly decrease for the foreseeable future. First, according to the National Intelligence Council, U.S. current fossil fuel dependency will continue well into 2050, "Under most scenarios, alternative fuels continue to provide a relatively small increase in the share of overall energy requirements. The IEA's baseline scenario shows the share of renewables rising just four percent during the 2007-2050 period."[19]Second, international budgetary constraints will lead nations' respective defense budget to contract and nations will likely concentrate defense spending on modernization or recapitalization of combat systems. They will also resort to a greater integration of military assets between coalition partners. Such funding prioritization and resource integration will continue to degrade our allied and partner already limited military logistics tail and lead to a heavier reliance on U.S. bulk fuel capability during more frequently executed combined multinational operations. Lastly, the January 2012

published strategic guidance announced the delay of the Ground Combat Vehicle (GCV) and “slowed procurement”[20] of the Joint Strike Fighter (JSF) after the cancellation of the Future Combat System (FCS) manned ground vehicle (MGV). These modernization delays confirm the extension of the Big Five systems (M1 Abrams Tank, M2 Bradley Fighting Vehicle, the AH-64 Apache Attack Helicopter, the UH-60 Blackhawk Utility Helicopter, and the M109A6 Paladin) and their near term corresponding contingency fuel requirements.

The Capability Gap

Despite historical precedence, US Code Title 10 responsibilities, unambiguous strategic guidance, ASOS and DSCA missions, and potential support requirements to multinational forces; the Army has aggressively reduced in the last four years its active duty bulk petroleum Force Structure by 78 percent. In 2008, 19 percent of the total petroleum units resided in the active component.

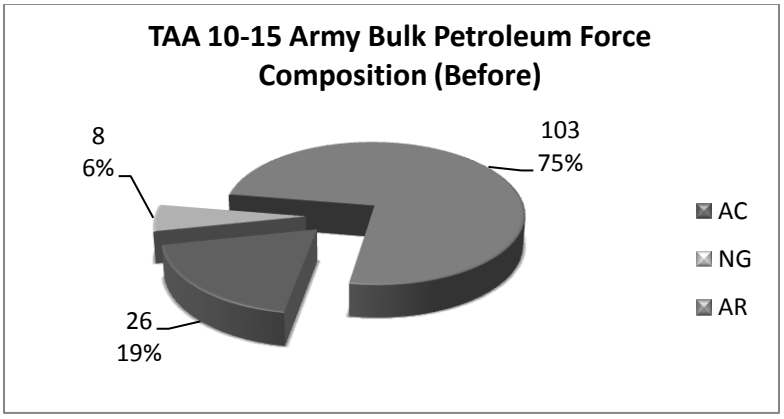

Figure 1: Army Petroleum Total Force Structure in 2008[21]

After the Total Army Analysis (TAA) 13-17, the Army cut its active component Echelon-above-Brigade (EAB) bulk petroleum capability down to only five percent of the total remaining bulk petroleum force in the entire Army inventory with 95 percent

residing now in the reserve component. By the end of 2012, only three Petroleum Support Companies (PSCs) and three Medium Truck Companies (POL) remain in the active duty inventory available (readiness considerations aside) for immediate worldwide deployment within the early entry phase of a no-notice contingency operation.

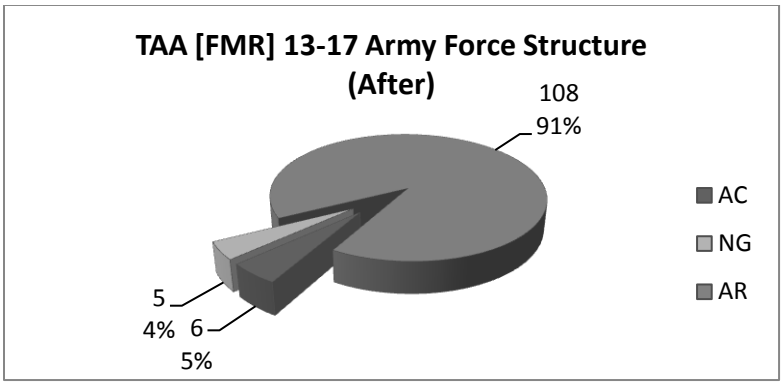

Figure 2: Army Petroleum Total Force Structure in 2012[22]

These active duty petroleum units are neither organized, nor trained, nor equipped to conduct terminal operations. As it stands, these units would be the only petroleum units available to meet all bulk fuel storage and distribution theater requirements in the initial phase of an operation while simultaneously building theater stocks to meet steady state bulk fuel requirements as units close in theater. The impact of this new active-reserve bulk petroleum Force Structure mix is significant in light of critical bulk fuel capabilities now solely residing in the reserve component including the Pipeline Petroleum Terminal Operating Company (PPTO) and Petroleum Supply Battalion Headquarters. To be clear, it is not the reduction of the total petroleum Force Structure that is in question but rather the distribution of petroleum capability between active and reserve component formations. Arguably, the twelve PPTO companies

currently in the reserve component could be reduced further to eight companies and still be able to support 150 mile of pipeline (with only two units deployed at one time) and maintain current reserve component unit dwell-time and deployment duration guidance. The removal of the pipeline distribution, terminal storage, and battalion mission command capabilities from the active Army's inventory have created an expeditionary gap significantly challenging the Army Sustainment community and threatening our ability to globally project and sustain an expeditionary Joint Force to protect the security of US interests, allies, and partners.

The nature of the capability shortfall is two-fold. There is an absence of early entry capability to begin the construction and operation of the theater bulk petroleum physical infrastructure and a lack of bulk petroleum functional expertise at the battalion and above levels of command to conduct the planning and integration of all assets. During the construction and operation of a pipeline there are many elements involved. These organizations include at a minimum: the Petroleum Pipeline Terminal Operating (PPTO) units assigned a Tactical Pipeline Terminal (TPT) and Inland Petroleum Distribution System (IPDS) missions, the bulk fuel truck companies responsible for the distribution to other bulk storage assets, the horizontal construction Engineer Company, Force protection assets, the Defense Logistics Agency (DLA) – Energy, the land lease contracting team, civilian contractors, and host-nation support.

In contrast with other capability gaps, the expeditionary bulk fuel shortfall has a long standing equipment solution resident in the Army Prepositioned Stocks (APS) program managed by the Army Materiel Command (AMC) as the executive agent for the Department of the Army. As such, there is over 755 miles of pipeline and associated

components divided among four APS sites ashore ready for employment. The APS also includes the TPT associated equipment in support of the PPTO storage mission.[23]These 755 miles of operational stocks do not include a 20-mile training set owned by FORSCOM and used by PPTO units and engineer units for training and certification. The prepositioning of Army pipeline allows reducing the equipment deployment timeline, improving the equipment readiness, maintaining supply accountability, and saving significantly unit storage space.

Table 3: Army Petroleum Pipeline (in miles) by APS Location[24]

APS-1 SIAD, CA	**APS-4 Japan/ Guam**	**APS-5 Qatar**	**APS-1(JTX) FPVA, VA**	**Total**
260	310	165	20	755

Beginning in 2011, the Combined Arms Support Command (CASCOM) Force Development Directorate-Quartermaster (FDD-QM) team conducted a bulk petroleum force structure review using a DOTMLPF framework for the analysis. In coordination with the Petroleum and Water Department of the Quartermaster Center and School and other petroleum entities, the team concluded that the RC mobilization timeline and subsequent train-up period once the unit has reported to the mobilization station prevents the PPTO and PS units to arrive in the theater of operations early enough to establish the necessary theater bulk fuel receipt-storage-distribution capability to generate enough theater stocks to meet the joint reception onward movement and integration timeline.[25] In April 2012, the 19th Expeditionary Sustainment Command (ESC) hosted a Korean Theater of Operations (KTO) rehearsal of concept (ROC) drill specifically addressing the bulk fuel requirements for a specific OPLAN. The nineteen

representatives from various strategic and operational petroleum organizations concluded the ROC drill and derived similar findings including a gap between the storage and distribution fuel CONPLAN requirements and the available unit capability to fulfill the fuel consumption the during the initial phase of the operation[26].

The Army Total Force Policy of fully integrating the operational reserve clearly articulates the Army's commitment to continue to streamline the mobilization process and finding ways of better integrating the RC force. In the last eleven years the Army has relied heavily on the RC especially in executing the sustainment war-fighting function in support of OIF and OEF. However, RC units continue to average 45-days from mobilization date to their Actual Arrival Date (AAD) in theater. Despite prepositioned equipment and highly efficient mobilization stations, RC units require a minimal amount of time to reach full mobilization, containerize unit equipment, and conduct mandatory deployment-related individual and collective training before deploying to a theater. Maintaining selected reserve component units at a higher tier of readiness as some pundits have suggested would reduce the mobilization timeline but would neither close the gap entirely nor address the broader gap in leader development and functional petroleum expertise at the battalion and higher levels of command.

Solutions to a Capability Shortfall

The solution to our bulk petroleum expeditionary capability gap must be comprehensive providing both a temporary short-term mitigation plan and a more permanent long-term solution. It must span across both the operating force and the generating force. The solution must be resident in both active and reserve components and should include allies and partners.

Our Petroleum Operations doctrine is outdated and in significant need of revision. Although some concepts, procedures, and some equipment remain in the inventory, FM 10-67, Petroleum Supply in Theaters of Operations, dated October 1985 (latest change), still refers to a linear battlefield and an Army of Excellence legacy force that has morphed into our current modular force. As an example, the last active duty Petroleum Battalion and Group Headquarters referenced in FM 10-67 were inactivated in July 2011 and September 2012 respectively with the last RC Petroleum Group Headquarters scheduled to inactivate in 2014. Our doctrine manuals must describe the new mission command and staff planning responsibilities resident in the Combat Sustainment Support Battalion (CSSB), the Sustainment Brigade (SB), the Expeditionary Sustainment Command (ESC), and the Theater Sustainment Command (TSC). Current doctrinal manual still refers to obsolete permanent welded and semi-permanent bolted steel tanks as theater storage options when the Army has migrated to a 210,000 gallon collapsible fabric tank storage solution for theater general support fuel farms. The Army Techniques Publication (ATP) 4-43 is currently in draft for staffing and is projected to supersede FM 10-67 and address the modular sustainment mission command structure and formalize the bulk petroleum staff responsibilities at each level of command.[27]

Beyond a much needed doctrinal update, the petroleum-specific professional military education (PME) and unit training are critical components to a comprehensive solution to close this capability gap. The creation of a joint petroleum planner course and active component use of the Forces Command (FORSCOM) Petroleum Training Module (FPTM) located at Fort Pickett, Virginia would significantly enhance the

readiness of the three remaining active duty Petroleum Support Companies (PSC) and develop leaders' functional expertise to address the current bulk fuel expeditionary gap. The Quartermaster Center and School (QMC&S) Petroleum and Water Department (PWD) must consider creating a Joint Theater Petroleum Planner Course. Currently, PWD only offers a Petroleum Officer Course (POC) focusing on the tactical employment of individual petroleum systems and is attended mainly by junior company grade officers before or immediately after the combined logistics captain career course. To date, there is a professional education gap at the operational level of planning for bulk petroleum operations. The Support Operations course is a multi-functional logistics planner course that neither adequately addresses the echelon above brigade petroleum capabilities nor covers bulk petroleum planning at the operational and strategic levels. The inactivation of petroleum units compounds the issue by limiting the officer's breadth of petroleum experience. The establishment of a joint program of instruction focused at the operational level of planning would prepare field grade logistics officers, petroleum warrant officers, and senior non-commissioned officers to serve with competence in staff positions within an Expeditionary Sustainment Command (ESC) or a Theater Sustainment Command (TSC). At the component and combatant command staff level, all officers assuming the duties of Sub-Area Petroleum Officer (SAPO) or Joint Petroleum Officer (JPO) should be required to attend this Joint Theater Petroleum Planner course. The three remaining active duty PSCs recommended to potentially absorb the pipeline terminal operating mission must be immediately integrated in the FORSCOM Petroleum Training Module rotational training annual schedule forecast and scheduled to participate in an annual Joint Logistics Over the Shore (JLOTS) readiness

certification exercise. This latter joint training exercise is critical to rehearse the ship-to-shore bulk fuel receipt function and integrate Navy units responsible for the establishment and operation of the Offshore Petroleum Distribution System (OPDS) with Army Engineer units and Quartermaster units involved with the construction and operation of the IPDS. This FORSCOM training site is the only training area accommodating the hands-on leader and unit collective training necessary to construct and operate a twenty mile IPDS[28]. The site is also resident to a deployable training set dedicated for bulk fuel units conducting coast-line joint training focused on Joint Logistics-over-the-Shore (JLOTS) capability including the Navy OPDS.

The FORSCOM Training Module has also been used to build partner capacity (BPC). Once a year members of the Korean Service Corps (KSC), a Korean paramilitary civilian workforce, travel to Fort Pickett, Virginia to train on constructing and operating the IPDS. This annual IPDS training allows for the KSC civilian workforce to maintain technical proficiency in U.S. petroleum pipeline operations. The KSC continues to be part of the broader combined logistics force necessary to meet all bulk petroleum requirements in the Korean peninsula regardless of the projected future scenario. It is this bulk petroleum-focused BPC program that the Army Sustainment community through the combatant commands' Army service component must extend to all other allies and partners. The inclusion of bulk fuel operations training in combatant commands' respective theater security cooperation exercises combined with foreign military sales of bulk petroleum storage and distribution systems would strengthen allied and partner land forces' logistics support structures and improve the interoperability of fuel systems within regional security alliances or partnerships. Building partner logistics

capacity will potentially reduce coalition forces' fuel external requirements and may provide some additional bulk fuel storage and distribution capacity in support of military operations involving U.S. Forces. This is particularly relevant for states identified as possible intermediate staging bases (ISBs) or states likely to host Joint Reception Staging and Onward Integration (JRSOI) activities.

The Force Development Directorate (FDD) under the Combined Arms Support Command (CASCOM) is leading the effort in closing the early entry bulk fuel capability gap by focusing on two principal lines of efforts. First, FDD has recommended the three remaining active duty PSC to be prepared to perform the mission of the petroleum pipeline terminal operating (PPTO) company (now residing solely in the reserve component after the last active component PPTO company inactivated in August 2010). The PPTO unit is responsible for the construction of the Inland Petroleum Distribution System (IDPS) and the establishment of the base terminal. It allows the rapid flow of product to flow from the Navy beach terminal unit (BTU) to the base TPT and from the TPT forward in the operational environment to forward TPTs or Fuel System Supply Points (FSSPs). Second, FDD recommends some additional force structure including a modular pipeline platoon attached to one of the remaining active component three PSCs, and three assault hose-line augmentation teams attached to each PSC to support the new IPDS mission. As additional expeditionary functional expertise, CASCOM has also requested the reintroduction of a functional petroleum battalion headquarters to provide mission command during the initial IPDS construction. Additional force structure has also been recommended to augment the current petroleum and water staff section within the expeditionary sustainment command as

well as grade changes within the sustainment brigade headquarters' and the theater sustainment command headquarters' modified tables of organization and equipment (MTOE). In addition to these recommendations, a more long-term solution to the PPTO capability should include modifying the doctrinal mission of the active component PSC to expand its mission and absorb the PPTO mission. This new Theater Petroleum Company would be capable of organizing to perform either the PPTO mission or the PSC mission based on requirements. Since the equipment required to operate an IPDS and to establish a TPT is already prepositioned globally as part of the Army Prepositioned Stocks, only minimal equipment would be required for home-station unit training for the three PSCs at minimal cost.

The establishment of a habitual relationship between each PSC and a Horizontal Construction Engineer Company will improve the readiness for all involved units and facilitate the synchronization of IPDS operations. At a minimum, Quartermaster and Engineer units would have to train together during at least one FORSCOM Petroleum Training Module rotation and one JLOTS exercise on an annual basis.

In an effort to maintain leadership visibility and to ensure this petroleum capability is integrated early on in the mission command structure of the most likely force to deploy first in response to a global crisis, the Joint Staff J31, Global Force Management Joint Force Provider, should consider including under the Global Response Force (GRF) requirements a bulk petroleum expeditionary capability consisting of a petroleum support company (PSC), an assault hose-line augmentation team, a pipeline platoon, a POL liaison detachment, and a horizontal construction engineer company. In addition to the mission command integration, the inclusion of this capability under the GRF would

identify and remedy any deployment readiness issues during GRF quarterly validation exercises. The Global Force Management business rules must change to require Joint Force Provider Joint Working Group (JWG) leads to input in the Joint Capabilities Requirements Manager (JCRM) database all contractor sourcing solutions to accurately reflect the demand signal for that capability regardless of the sourcing solution. The Request for Forces (RFF) format requires COCOMs to specify if the requested capability can be contracted but there is no mechanism after Joint Staff validation to require an administrative input to capture the requirement if it has been filled by a contract. Ideally, all contingency contracting solutions replacing a unit capability should be captured in the global force management process to gain more accuracy in the requirements baseline for each COCOM. Much like capturing the demand for a repair part purchased “offline” using a unit government purchase card in the Standard Army Maintenance System - Enhanced (SAMS-E), the demand for a capability must be captured in the JCRM database, the only repository or system of record for required operational capability. Among many other requirements that have been sourced with contractors, this procedure will accurately reflect the bulk petroleum capability requirement history. A useful supplementary argument would be to include requirements fulfilled by assigned forces to further increase JCRM’s accuracy. This historical data should be considered for future force structure decisions pertaining to adjusting capacity or eliminating the capability from the inventory. Presently, the JCRM database does not reflect any bulk fuel requirement for any Combatant Command fulfilled by contractors.

Current Gap Long Term Implications

The Army petroleum community consists mainly of two major subgroups including the direct support (DS) petroleum units organic to the BCT or functional brigade and the general support (GS) petroleum units under the operational control of a Sustainment Brigade and executing the theater receipt-storage-distribution mission ending with the throughput of bulk fuel to the supported brigade. The professional development expectation for a soldier with the 92F fuel specialist military occupational skill (MOS) identifier is to gain experience on all bulk petroleum systems (DS and GS), develop an in-depth bulk fuel operational expertise, and then, along a functional path, serve on staff at the brigade level and above to plan, integrate, and synchronize all current and future bulk fuel operations during peacetime and at war. The transition of the general support capability to the reserve component has stripped all GS functional leadership positions and critical professional development opportunities from the active component inventory. In doing so, this transition has precipitated a rapid erosion of Army bulk petroleum technical expertise. Moreover, the compilation of training and maintenance tactics, techniques, and procedures (TTPs) as well as the collection of operational observations, insights, and lessons (OILs) no longer occurs as routinely or effectively. The habitual relationship between the engineer units, the DLA-Energy representatives, and the PPTO units no longer exists which in turns diminishes the training opportunities and the effectiveness of both the engineer and quartermaster capabilities in accomplishing their respective tasks. The analysis of maintenance and supply data to identify trends to improve equipment, training, and update doctrine becomes even more challenging. The senior leadership exposure to petroleum soldiers, units, and systems is drastically reduced and prevents petroleum critical issues to

surface and gain rapid resolution through leadership channels and removes the situational awareness so critical to the commander. These effects associated with having a capability exclusively resident in the reserve component make the deployment and employment of such organization increasingly challenging from a mission command and integration perspective.

Conclusion

Faced with the reality of deep and sustained defense budget cuts while posturing our Army to meet the challenges of a rapidly changing global security environment, the international perception of our responsiveness to any threat becomes as critical as the breadth and depth of our military power. Thus AC-RC Force mix is as important as Force Structure or end strength.

In the final analysis, Force Structure decisions are a measure of our commitment to our Soldiers in the performance of their wartime mission. GEN Dempsey's remarks best describes our ultimate responsibility as leaders.

> I've met with Soldiers serving in the very center and at the very edges of freedom. They understand the challenges we have, that we face as an Army, and as a Nation. Their expectations of us are as simple as they are profound. They trust that we will provide the resources necessary for them to succeed in the fights in which we are currently engaged; and, they trust that we will have the wisdom and resolve necessary to prepare them for the missions unknown to us today, but which surely await us. [29]

As we execute our re-balance to the Asia-Pacific region, we must account for changing conditions within our operational environment, accurately identify all geographic combatant commanders' requirements, and assess the requisite military capability and capacity to apply toward our strategic objectives. We must have the patience to continue working towards a reduction in fuel consumption through modernization, technological advancement, and building partner capacity. The Army

sustainment community will require at least two years to close the current bulk petroleum expeditionary capability gap. We must better capture and provide increased visibility over the actual demand signal for all our capabilities. The Army must carefully weigh the benefits of force structure short term cost savings with long term degraded capability implications. Beyond responding to operational requirements, we must maintain petroleum technical expertise, pipeline operations experience, mission command, and leader development opportunities within the active component to grow our petroleum professionals. We rely on our ability to reverse engineer this significant drawdown should the need arise to grow the Army once again to fight a major conflict. The absence of unique capabilities from the active component appears contrary to the desired notions of reversibility and expandability.

To date our current global leadership has been measured in part by our ability to effectively apply our military element of national power. Perhaps, this period of transition announces the beginning of an era during which our role as a global leader is also defined by our ability to more efficiently leverage our military force while committing all available resources in support of our national strategy and with a clear assessment of the associated strategic risk.

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